The Battle for Ramadi

The Final Assault on the City, 22-28 December 2015

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Solitaire

Battle for Ramadi

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1.0 Introduction

The Battle for Ramadi is a solitaire simulation of the fighting for the city of Ramadi in Iraq at the end of 2015. In this game the player represents the commander of the Anbar Operations Command (AOC), the Corps level HQ for the Iraqi Security Forces (ISF) tasked with retaking the city from the Islamic State of Iraq and al-Sham (ISIS). The rules control the actions of the ISIS forces.

The game has been designed as a vehicle to understand force structures and capabilities, provide insight into the operational and tactical issues encountered and to provide insight into the conduct of the wider conflict across the region. The game was designed at the time of the fighting in Ramadi and was therefore based on limited open source material. Although the fighting in Iraq moved on from Ramadi to Fallujah and then to Mosul, information remains incomplete. Nevertheless, playing this game gives a good representation of the fighting as reported and the sustained hard slog against unpredictable foes that has been replicated in city fighting throughout the Middle East.

2.0 Game components

This game consists of the following components:

- Rules Booklet
- 17" by 22" Map
- ISF Operations Board for controlling assets and tracking casualties and victory points
- Player Aid Chart
- 85 double-sided counters reflecting combat units, assets and administrative markers

3.0 Forces

There are six types of units in this game:

3.1 ISF Units

ISF Ground Units: These counters represent Iraqi military ground forces. They are either placed on the map to indicate their deployment on operations or placed on the ISF Operations Board to represent transit between operational areas.

ISF Ground Assets: These counters represent ground assets available to support the ISF ground forces such as "advisors" or bridging equipment. Ground assets are allocated to operational zones on the ISF Operations Board and deploy to the map in support of operations in the corresponding operational zone, after which they return to the operational zone on ISF Operations Board.

ISF Air Assets: These counters represent air support and UAVs/drones used to support ground operations. They start on the ISF Operations Board in the Air Assets Available box. They are deployed to the map in support of operations after which they are placed in the Expended Air Assets box on the ISF Operations Board.

3.2 ISIS Forces

ISIS forces come into play whenever the ISF player mounts an operation to clear or defend an area. They are removed from the map after the operation is resolved:

ISIS IED State: These counters represent the extent to which an area is prepared by ISIS with IEDs of all types from virtually

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unprepared areas to heavily mined kill zones.

ISIS Fighters: These counters represent a range of unit types from untrained militia to local special forces.

ISIS Assets: These counters represent a range of ISIS assets including leaders, foreign fighters, air defence weapons, suicide bombers and innocent civilians who are ever present in dense urban areas. Some assets (Attack counters) allow ISIS forces to attack the ISF.

4.0 Setting up the game

4.1 ISF force deployment

ISF Ground forces setup in the red outlined deployment hexes on the map. The *West Deployment Zone* is defined by the 5 red outlined deployment hexes to the west of the Euphrates Channel, the *North Deployment Zone* by the 4 red outlined deployment hexes to the north of the Euphrates River, and the *South Deployment Zone* by the 2 red outlined hexes at the southern edge of Ramadi east of the Euphrates Channel. Note that no more than two ground units may set up in the same deployment hex. Place ISF ground assets in the operational zones or the transfer box on the ISF Operations Board. Place all ISF air assets in the Air Assets Available box on the ISF Operations Board.

4.2 Terrain issues for deployment

From the North and West Deployment Zones, the only way ISF Ground Units can access the ISIS held areas in the center of the city is by crossing the bridges, dams, and barrage over the Euphrates River and Euphrates Channel. These are wide water courses and no unit may enter or occupy any river or channel hex at any time during the game. Bridge hexes may be occupied but not at the start of the game. ISF forces may enter bridge hexes in the operations phase from either of the two hexes adjacent to the end of the bridge. The only exception to this is the Ramadi Barrage, which can only be entered from the adjacent Glass Factory hex.

5.0 Playing the game

5.1 Game outline

In the game, the player acts as commander of ISF forces tasked with taking key objectives within the Ramadi city center. ISF forces are represented as units on a map of the city which has a hex grid superimposed on it to regulate unit positioning and movement. ISIS forces appear on the map when the ISF launch an operation to clear a hex in a contested area. The game system reflects the ISIS response to ISF combat operations and the launching of counter attacks.

The ISF player has ten turns to achieve their victory conditions. Each turn the ISF player plans and executes operations designed to extend their control over the city and move their forces closer to the six marked objective hexes (Justice Compound, Government Complex, Hospital, Grand Mosque, Stadium, and Ramadi East station).

The outcome of each operation is based on the ISF forces and assets committed to the battle and a randomised response from ISIS. Each operation results in either a win for the ISF, with the clearing/occupation of a contested hex and the possibility of ISF casualties, or a win for the ISIS forces resulting in the accumulation of victory points for ISIS. If the ISF side takes casualties the pace of their operations will be degraded both because of the need to

temporarily remove casualties from the operation and the reduction in possible operations points as casualties mount. Other outcomes of operations can also result in victory points for either side (e.g. civilian losses representing positive outcomes for ISIS and the capture of ISIS leaders representing successes for ISF).

At the end of turn 10 the ISF player tallies the ISF victory points to determine if victory was achieved. The ISF must score more victory points than the ISIS forces **AND** must occupy the Government Complex hex. See the Sequence of Play on the Player Aid Card for additional details.

5.2 Determining victory

ISF victory points for occupying geographical objectives: The ISF receives victory points as follows:

- Each key objective hex occupied with a clear Line of Communication (LoC) scores 5 victory points.
- Each urban hex occupied in the contested zone with a clear LoC, other than key objective hexes, scores 1 victory point.
- If the ISF forces do not occupy the Government Complex objective hex at the end of Turn 10, they automatically lose the game.

Definitions:

- **Deployment Zone Hexes**: These are the red outlined set-up hexes for the ISF ground units. There are 4 in the Northern Operational Zone, 5 in the Western Operational Zone and 2 in the Southern Operational Zone. See 4.1.
- **Operational Zone:** The deployment hexes are located in the three Operational Zones (North, West and South). These zones link to the related operational zone boxes on the ISF Operations Board. Movement of ground units between Operational Zones takes place only via the Transfer Box on the Operations Board. See 6.2.
- **Contested Zone:** The contested zone consists of every non-river hex south of the Euphrates and east of the Euphrates Channel except for the Southern Deployment Zone hexes. Bridge hexes are part of the contested zone. Effectively, all hexes excluding the red outlined ISF deployment hexes. See 5.2.
- **Occupy:** ISF forces can only enter a contested zone hex by conducting an operation and advancing after combat. Once entered by ISF forces a contested zone hex is cleared. If an ISF unit does not physically occupy a cleared hex, the ISF player can place a cleared marker to indicate that the contested hex has been cleared.
- **Line of Communication (LoC):** An occupied/cleared hex (key objective or urban hex) has a clear LoC if an unbroken route can be traced from that hex through cleared hexes (either occupied by an ISF unit or by a cleared marker) to an ISF Deployment Zone. If a LoC cannot be traced at any stage, adjust the VP track accordingly.

Note that a cleared hex will revert to ISIS control when all occupying ISF units are removed because of casualties resulting from an ISIS attack, when an ISIS attack destroys a cleared marker or when all the ISF units making an attack from a cleared hex become casualties as an outcome of an operation. Effectively, ISIS re-infiltrates the cleared area. The ISF player is

required to assault any previously cleared hex in the usual way to recapture it.

Note also that there is a deliberate limit on the number of cleared markers (12) in the counter sheet. If the player runs out of cleared markers, control can only be maintained by using an ISF ground unit to occupy the hex. You may not move a cleared marker from one hex to another or create another cleared marker.

ISF victory points from operations:

- 1 for each Emir eliminated.
- 1 for each ISIS attack repelled.

Maximum potential ISF victory points: 74 (six target hexes, two Emirs and 10 ISIS attacks, 32 urban hexes).

ISIS victory points:

- 1 for each ISF operation defeated.
- 1 for each civilian casualty caused by ISF operations.
- 1 for each ISF air attack aborted.
- 1 for each ISF casualty.

Keep the VP tracks on the ISF Operations Board up to date as the turns progress. At the end of turn 10 the ISF player compares the victory point totals and determines whether they have won. The ISF player must score more victory points than ISIS **AND** must occupy the Government Complex hex to win. If the Government Complex hex is not occupied then the ISF player has lost, regardless of the number of victory points scored.

6.0 Turn execution

6.1 Plan ISF operations

The assumption is that, as the ISF experiences increasing casualties, the tempo of operations slows down to allow for casualty removal, integration of replacements and rotation of units.

Roll 1d6 on the ISF Operations Table on the Player Aid Card and cross reference the result with the current level of ISF casualties to determine the maximum number of ISF operations that can be conducted this turn.

Once the maximum number of ISF operations is determined, place available operations markers on the ISF desired operation target hexes for the turn. If no operations markers are available use any convenient marker or token.

Each operation allows one ISF force of up to two stacked units (supported by a maximum of one ground AND one air asset (if available)) to make one attack from one hex against an adjacent contested area hex. For multi-unit attacks, the Player will designate one of the two attacking ground units as the lead unit and place it on top of the second (follow-up) unit. Each unit can only participate in one operation per turn.

6.2 Deploy ISF assets

Allocate ISF assets to support ISF operations on the map as follows (each operation can be supported by a maximum of one ground asset and one air asset):

- **Deploy ground assets to operations:** One ground asset unit may be allocated to each operation provided the operation is being conducted in its current operational zone. For example, a ground asset in the North Operational box on the ISF Operations board can only be used to support operations connected to the North Deployment zone on the map (see managing ground assets note below).

- **Deploy air assets to operations:** One air asset may be deployed from the "available" box on the ISF Operations Board to any one operation in any zone on the map. Note that, once used, an air asset is returned to the air asset "expended" box on the ISF Operations Board and cannot be used for the remainder of the turn. Any or all available air assets can be used in one turn but only one air asset can be used to support any one operation.

Managing ground assets: A ground asset in an operational zone box on the ISF Operations Board may only support an operation in the associated operations area on the map. As ISF forces advance into the contested area, ground assets can be allocated to any operation by any unit which can trace a clear LoC back to its associated deployment zone. This means that ISF units isolated by having their LoC blocked to a deployment zone, cannot receive ground asset support. To support an operation in another operational zone, the ISF player must use the transfer box on the Operations Board to redeploy the asset during the Operations Inter-phase.

6.3 Deploy ISIS defenders

Make selections from the ISIS IED, Fighter, and Assets pools/cup by blindly drawing one counter from each pool/cup and then randomly allocating them to an operation. All hexes targeted by operations receive one counter from each pool/cup for a total of three ISIS counters per targeted hex. The ISIS counters are revealed when the ISF Player executes each operation. Note that if an ISIS Attack counter is revealed, place that aside for resolution in the ISIS attack phase (see 6.6 below). Draw another counter from the asset pool to replace the attack counter. Only one attack counter may be

played in the ISIS attack phase, any further attack counters drawn should be put back in the ISIS asset pool and another counter drawn in its place.

6.4 Execute operations

The ISF player then executes operations in any order desired. For each operation calculate the ISF attack strength total:

- Add the ground unit value for the lead unit to that of the follow-up unit (note that the follow-up unit **cannot** add more value to the attack than the value of the lead unit, so a CTS unit of +4 as a follow-up unit cannot add more than +1 if the lead unit is a +1 Police unit)
- Modify for ground asset or air asset effects (some assets add a value to the ISF score, others may negate ISIS advantages such as IEDs – refer to 8.0 ISF and ISIS Forces for details)
- Deduct from the ISF attack strength total the defensive terrain effects of the target hex.
  - -1 bridge or palm grove hex
  - -2 urban hex
  - -3 objective/VP hex
- Roll 1d6 and add the result to give the final total ISF attack strength

For each ISIS defended hex calculate the ISIS defense strength total:

- Add the ISIS IED state value and the fighter value
- Modify this total for ISIS asset effects - refer to 8.0 ISF and ISIS Forces.
- Roll 1d6 and add the result to give the final total ISIS defense strength

Resolve the operation by deducting the ISIS total defense strength from the ISF total attack

strength and applying the results from the Operations Results Table on the Player Aid Card

6.5 Apply the results of the operation

If the ISF wins control:

- Check for ISF casualties by rolling 1d6 against the target number listed on the ISF Operations Results Table. If the hex that is being advanced into is a victory point hex add 3 to the casualty die roll (to reflect the likelihood that the target has been set up as a large-scale building bomb, as was the case with the general hospital).
- If one casualty is incurred, the lead unit must be removed as the casualty. Place the unit in the transfer box on the Operations Board flipped to its casualty side.
- Update the ISF casualty track and the ISIS VP track.
- Move at least one unit of the surviving ISF forces into the newly cleared hex.
- Check for special effects if an ISIS Emir was in the target hex.
- Update the ISF victory point track for VPs associated with objective hexes.

Note: Casualties are removed from the map for one complete turn, at the end of the **next** turn they are flipped in the Operations Inter-phase to their available side and then can be used in the following turn.

If ISIS defeat the operation:

- If two ISF automatic casualties were incurred remove all ISF units participating in the operation to the transfer box on the Operations Board flipped to their casualty sides.
- Otherwise roll 1d6 for ISF casualties in the usual way. If a casualty is incurred, the lead ISF unit must be removed as the casualty.

Place the unit in the transfer box on the Operations Board flipped to its casualty side.

- Check for special effects if Civilians were in the target hex.
- Update the ISF casualty track and ISIS victory point tracks. The ISIS score 1 victory point for defeating the operation whether or not they cause ISF casualties.
- Return all ISIS counters to their respective force pools/cup.

Note: ISF total casualties for the game are reflected on the casualty track but only result in temporary removal of units from the map. This reflects the debilitating nature of the battle resulting in a reduction in the rate of operations.

6.6 ISIS attack phase

This rule simulates the ability of ISIS to mount counter-attacks. It also makes the game more unpredictable and more difficult for the ISF Player to win. Only one ISIS attack can be made per turn. If a very unlucky ISF player is having a bad day, they could experience up to 10 ISIS attacks in a game.

ISIS attack priorities: The objective of an ISIS attack is to slow down ISF progress into the city. The ISIS attack will therefore be launched according to the following priorities:

1. Cleared hexes: If an attack can be launched against an ISF cleared hex (but otherwise unoccupied by an ISF ground unit) in order to remove a clear LoC from an occupied hex, and therefore reduce ISF victory points, then that attack must be launched. If multiple hexes meet this criteria, randomly determine which one is attacked

2. Occupied hexes: If an attack cannot be made on an unoccupied cleared hex, then it must be launched against the weakest ISF unit in any hex in the contested area (regardless of whether it is stacked with other ISF units).

Resolving attacks:

- **Against unoccupied cleared hexes:** The attack is automatically successful. Remove the cleared marker and reduce the ISF VP track as appropriate. Note, a single ISIS attack may remove the LoC to more than one ISF VP hex.
- **Against ISF units:** The ISIS attack is made with a combat value of 3 (representing a suicide attack using vehicles or an attack using mortars or rockets) plus the result of a 1d6 roll. The ISF unit defends with its combat value plus the result of a 1d6 roll, no modifiers are applied for terrain. Compare the ISIS and ISF values and apply the results from the ISIS Attack table on the Player Aid Card.

After the ISIS attack is concluded, place the ISIS attack counter back in the ISIS asset pool.

6.7 Operations inter-phase

- **Move deployed on map ISF Ground Units**: All ISF ground units deployed on the map are eligible to move **except** those which advanced after an operation during the current turn. Eligible units may move within a deployment/operational zone, including any cleared hexes linked to that zone by an unbroken LoC. Simply move the units ensuring that the two-unit stacking limit is respected at the **end** of the movement phase.
- **Deploy ISF Ground Units from Transfer Box:** Available units in the transfer box, **excluding** any casualties incurred during the

current turn (see Sequence of Play on the Player Aid Card), may be placed in any Operational/Deployment zone by placing them in any hex in the zone or cleared hexes with an unbroken LoC back to the zone.

- **Transfer Ground Units between operational zones:** Eligible units on the map may be transferred to another sector. Remove the units from the map and place them on the Operations Board in the transfer box. They re-enter the map in the Operations Inter-phase of the next turn (effectively missing one operations round).
- **Redeploy Ground Assets:** Instead of allocating a ground asset to an operation it may be moved from the operational zone box to the ground asset "transfer" box. This will allow it to move in a future turn to another zone. Any ground asset in the "transfer" box at this time can be moved into an operational zone box for use in an operation in that zone during the next turn.
- **Update Air Asset readiness:** Air assets placed in the expended box during the **previous** turn may be moved into the available box for use in the next turn. Note that air assets expended during the current turn may not become available until the end of the next turn. For example:
  - o Turn 1: Air Asset used and placed in the expended box.
  - o Turn 2: Air unit moved to available status.
  - o Turn 3: The air asset can be deployed in the asset allocation phase for operations at the start of the turn.
- **Replace ISF casualties:** Ground unit casualties from the **previous** turn may be flipped to their available side indicating they are ready for deployment in the next turn.

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Note that casualties incurred in the current turn remain in the ground unit transfer box on their casualty side and do not become available until the end of the next turn. For example:

- o Turn 2: Ground unit removed as casualty due to the result of an operation or attack and placed in the transfer box on its casualty side
- o Turn 3: Ground unit flipped to non-casualty side.
- o Turn 4: Ground unit deployed from transfer box to a deployment area on the map for use in operations during the NEXT turn.

7.0 Optional rules

7.1 Drones

Drone units can protect areas and act against enemy forces. The ISF player may use a drone asset to protect a vulnerable cleared area hex in case of an ISIS attack. Deploy the drone unit from the available air asset box to the cleared hex during the asset deployment phase. The presence of a drone unit requires the cleared hex to be treated as '**occupied** by an ISF ground unit' for the purpose of ISIS attack targeting priorities. In the event of an ISIS attack occurring against that hex, conduct it as an attack on an ISF ground unit using the drone's combat value of 2 plus 1d6 result. At the end of the turn, return the drone to the air asset expended box. Both drone assets can be deployed in any one operations phase to two different cleared hexes.

7.2 Variable game length:

The ISF declared victory on 28 December 2015; the day after they captured the Government Complex. At that stage, approximately 30% of the city was still under ISIS control and fighting continued well into January 2016. This optional rule reflects the pressing need for the Iraqi Government to have their first success in the counter-attack against ISIS regardless of whether they had actually won!

Starting the turn after the ISF Player captures the Government Complex hex, roll 1d6 in the operations phase. If the current turn number plus the die result exceeds 10, the game is over and victory is assessed. Bearing in mind that the ISF Player needs to capture the Government Complex hex or automatically lose, the timing of the assault on the Government Complex is important. This gives great insight into the competing pressures and uncertainties affecting the ISF command despite their overwhelming material superiority.

7.3 ISF On-call Close Air Support (CAS)

An ISF unit that is subject to an attack in the ISIS attack phase may attempt to call in CAS if an air asset is available. Roll 1d6 and on a roll of 4 or more, the CAS is available to assist in the unit's defense. The ISF unit defends with its combat value plus the combat value of the air asset and the result of 1d6, no modifiers are applied for terrain. Resolve the attack on the ISIS attack table in the normal way.

If CAS is called in successfully return the bomber to the air asset expended box on the operations board on completion of the ISIS attack.

This rule allows the ISF player to maximize use of air assets to protect ISF lines of communication. The CAS rule can be used in addition to the drone rule but CAS cannot be used to support a drone defensive action. The chance that an on-call CAS mission will not arrive takes into account the difficulty of acquiring targets in an urban environment.

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8.0 ISF and ISIS Forces

8.1 ISF Forces

Unit	Casualty	Type	Combat Factor	Quantity
		Counter Terrorism Service	4	4
		Mechanized Infantry	3	3
		Infantry	2	6
		National Police	2	3
		Emergency Battalion	1	2
		Militia	1	3

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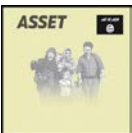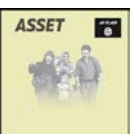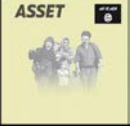
8.2 ISF Assets

Asset	Transfer	Type - Effect	Combat Factor	Quantity
Tank — GROUND ASSET 3	Transfer	Tank (T-72)	3	1
SF — GROUND ASSET 0	Transfer	US Special Forces "advisors". When used in an operation, this asset allows the ISF player to roll 2d6 and choose the best score to calculate the ISF total score.	0 Red special effect	2
Bridge — GROUND ASSET 0	Transfer	Bridging engineers When deployed, this asset reduces the value of ISIS IED units to 0. This asset can only be used in operations against bridge, barrage, and dam hexes.	0 Red special effect	1
Artillery — GROUND ASSET 4	Transfer	Artillery	4	1
Breacher — GROUND ASSET 0	Transfer	Assault IED clearance equipment. When deployed this asset reduces the value of ISIS IED units to 0. This asset can only be used in operations against non-Bridge hexes.	0 Red special effect	1
Bomber — AIR ASSET 4	Expended	US/UK Bomber missions These represent ground attack support provided by RAF Tornado GR4s or by USAF B1Bs or F15E Strike Eagles	4	2
Drone — AIR ASSET 2	Expended	US/UK Drone missions MQ1 Predator and MQ9A Reaper UAVs May be used to protect cleared hexes, see optional rule in 7.1.	2	2
OPS		**Front: OPS** Used to indicate hexes to be the subject of ISF operations. **Back: Cleared** Denotes contested area hex cleared of ISIS forces but not currently occupied by an ISF ground unit. The cleared hex represents minor ISF forces and also supporting Sunni tribal militia. Allied Shi'ite militia were not allowed to enter the city.	0	12
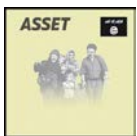
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8.3 ISIS Forces

Category	Unit	Back	Type	Combat Factor	Quantity
IED	Complex 3	IED	+0 Poor (3) +1 Prepared (3) +2 Deep (2) +3 Complex (2)	0 - 3	10
ISIS Fighters	Local SF 3	ISIS	+0 Militia (3) +1 Army of Adversity (3) +2 Local Specialists (snipers/IED) (2) +3 Local Special Forces (2)	0 - 3	10
ISIS Assets	Emir 3	ASSET	Emir: Local commander. If an Emir is the target of an ISF operation, roll 1d6, on a score of 4 or more ISF receive 1 victory point and the Emir counter is permanently removed from the game. Note: If a drone asset is involved in the attack the die roll becomes 2 or more.	3	2
	Foreign Fighters 3	ASSET	Foreign Fighters: Fanatical and committed to fighting to the death.	3	2
	Civilians 0	ASSET	Civilians: Innocent civilians who must be protected under the laws of war. May be used as a human shield by ISIS forces. If civilians are the target of an ISF operation, roll 1d6, on a score of 3 or more ISIS receive 1 victory point.	0	2
	SV-IED 1	ASSET	Suicide Vest Attack (SV-IED): One or more individuals using an S-VEST to cause ISF casualties.	1	1
	VB-IED 2	ASSET	Vehicle Borne IED (VB-IED) attack: Organized assault on ISF troops.	2	2
	Air Defence 0	ASSET	Air defense weapons such as Stinger or Grail missiles. If encountered during an operation involving ISF air assets, roll 1d6. A score of 4 or more results in the air attack being aborted. Return the air asset to the expended pool and ISIS gain 1 victory point.	0	2

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Category	Unit	Back	Type	Combat Factor	Quantity
ISIS Asset	Attack 3 ASSET	ASSET	A combination of rockets, mortars and vehicle borne IEDs reflecting the ISIS forces capability to launch attacks on ISF troops.	3	4

9.0 Designer's notes

Why a game on Ramadi? I started the design of this game whilst the battle was in progress. My main objective was to try to understand the nature of the battle and, at that time, assess whether the ISF would be successful. After the previous stalled attempt to take Ramadi earlier on 2015, this battle would be crucial. In the event, ISF and its allies won the battle. The lessons learnt at Ramadi were crucial in developing the methods and tactics to retake Iraq from ISIS occupation. Given that the ISF and Iraqi government had barely survived the onslaught from ISIS in 2014, this was the turning point. The use of encirclement, combat leadership by the CTS and significant use of air power were the keys to retake Fallujah later in 2016 (The Third Battle of Fallujah). A similar, but far more sophisticated and complex approach was later used to retake Mosul in 2016-17.

Why a solitaire game? Apart from the fact that I designed this to play on my own, there are good reasons for not making this a two-player game. The first is that we really don't know (or at least the information is not in the public domain) how many ISIS fighters were in the city. We also don't know what the ISIS strategy was for the defence of Ramadi or how their command and control process worked. With these sorts of constraints making a game with a viable ISIS player role would be difficult.

Why this game system? My approach here is to keep things as simple as possible. Solitaire games should not feel like doing an accountancy course. My aims were to have:

- A simple combat system that allows integration of all of the combat arms in one process. There is nothing simpler than an opposed die roll which goes back to the start of the wargames era.
- Uncertainty in the system. The ISF player should not be able to predict the outcome of any operation hence the potential for significant ISIS resistance, civilian casualties and aborted airstrikes.
- Victory conditions that were always challenging for the ISF player. It would take many replays to see what the average result would be. I believe that the weight of the ISF forces should produce an ISF victory in at least 50% of games. However, in any one game, the outcome will always be uncertain (quantum gaming!).

Why didn't ISF close off the Eastern side of Ramadi? Good question. One answer is that ISF were not fully in control of the environment around Ramadi. ISIS forces operated in the surrounding area and successfully carried out attacks on ISF forces. The other answer is that allowing an exfiltration route would reduce the chances of ISIS fighting to the death. Even though exfiltrating ISIS troops and civilians were very harshly dealt with by ISIS, many took that route. A similar strategy was used at Fallujah when Coalition airstrikes were able to destroy a

very large convoy of exfiltrating fighters. At Mosul, there was enormous debate about whether to use the same strategy but that is another story!

Why is airpower so strong? It is strong but probably could be stronger. Even with the CTS leading on the ground supported by US advisors, the use of airpower was critical in retaking the city.

What sources were used? My primary source has been the Institute for the Study of War (ISW). This is a well-informed US public policy research organisation, although very close to the military and political complex in the US. I have also made appropriate use of Wikipedia which has, on this occasion, been very useful and apparently reliable and well informed. Unfortunately, there hasn't been an official AAR on the battle and it would certainly be very useful to have such a report. Perhaps we'll have to wait for a while.

10.0 Background

Ramadi is a key Iraqi city on the River Euphrates 110kms west of Bagdad. It is the regional capital for the province of Anbar and is in a largely Sunni area.

When ISIS launched its offensive in 2014 to make its proclaimed Caliphate a concrete reality, its forces attacked Ramadi, along with other key locations in Iraq. Between November 2014 and May 2015 approximately 1,000 ISIS fighters were able to take control of the city. The ISF, with around 6,000 troops, was unable to hold Ramadi in the face of the ISIS attack. The Anbar ISF commander was criticised for what was described as "an unauthorised withdrawal" from the city, although the ISF was said to have suffered around 1,000 casualties

during the battle which illustrated the severity of the fighting.

A counter-attack by the ISF to secure Anbar province was launched in May 2015 but petered out by September. In October 2015 reorganised ISF forces commenced another operation to retake Ramadi. By 11 November they had managed to cut ISIS supply lines into the city and were able to attack directly into the city. This game allows the player to command the final week-long assault on the city which commenced on 22 December 2015.

11.0 Historical notes

11.1 Progress of the battle

Between 11 November and 9 December 2015 ISF reached positions surrounding the heart of the city centre, the Euphrates to the north and the Euphrates Channel to the west. Both waterways had important dam features, the Warrar Dam across the Euphrates and the Ramadi Barrage across the Euphrates Channel. ISIS had taken steps to destroy the bridges, but it is not clear how successful they were. ISF bridging engineering is built into the game through the need to undertake operations into bridge hexes and the availability of bridging assets.

ISF had also secured a jumping off point to the south in Humaira. Importantly, this jumping off point was not bounded by a water obstacle. The areas to the east were not secured, allowing an outlet for retreating ISIS forces.

By 28 December, it was reported that ISF had recaptured the regional government centre in the city and that the city was effectively under government control.

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However, on 2 January 2016 CNN was reporting that fighting continued in Ramadi and that ISIS had undertaken a major suicide bomb attack using Vehicle Borne-Improvised Explosive Devices (VB-IEDs) against the Iraqi 10th Division HQ near Ramadi.

On 3 January an Iraqi spokesman said that 80% of the city had been captured. However, fierce fighting continued throughout January as ISF troops gradually took the city neighbourhood by neighbourhood. ISF had had great success in the use of airstrikes against ISIS targets killing significant numbers of fighters and their commanders. The ISIS minister of war, Dohan al-Rawi, was also reported killed in the city.

Anbar Police Chief Maj. General Hadi Rezeig reported on 24 January 2016 that ISF were finally in control of the city. On 26 January ISF reported that they had found the ISIS HQ in eastern Ramadi and captured it. As ISF troops advanced they were able to release civilians held hostage in the city by ISIS, rescuing some 3,000 people.

There were more ISIS fighters in the city than originally estimated. They are thought to have numbered around 1,400. Some were killed in airstrikes as they attempted to leave the city by crossing the Euphrates. Some escaping ISIS fighters are said to have been burnt alive by ISIS for leaving the city. The intensity of the fighting indicates that ISIS made a maximum effort in their defence of Ramadi.

Total casualties are estimated at:

- ISIS: 1,100 to 2,000 fighters engaged with some 350 to 1,000 killed (depending on sources).

- ISF: 10,000 ISF troops and 2,500 Sunni tribal fighters engaged with some 1,000 wounded and 300 killed.
- Civilians: 500,000 displaced and 143 killed.

The battle for Ramadi was the first occasion on which ISF took on and defeated ISIS. The battle moved then east with successful operations to retake Fallujah and Mosul, effectively destroying ISIS in Iraq.

11.2 ISF forces

Background: There is very little public understanding of the complexities of the situation in Iraq. The way that the ISF are split organisationally (for political and religious reasons), between the Department of Defence (DoD), the Ministry of the Interior (MoI) and the Counter Terrorism Service (CTS). Neither is it clear to outsiders the extent to which Iranian Revolutionary Guard specialists operate in Iraq, effectively running their own militias and Government sponsored operational activity (but often without much supervision). There are also both Shia and Sunni militias, some of which have been "nationalised" and taken into the ISF and some, such as the US sponsored Sunni Tribal Security Force, were in the process of being raised in 2015. This is an exceptionally difficult picture to piece together and made even more complicated by both the continuing US and Coalition involvement in air (and drone) missions and also training (and there is a thin line between training and active combat assistance).

In the following sections there are brief descriptions of the key components of the ISF with some conjecture about what elements were deployed in the Ramadi operation. Note that these broader descriptions do not cover

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Kurdish and other forces in the Northern operational area.

Department of Defence (DoD) forces: Much of the Iraqi Army disintegrated in 2014 in the face of the initial ISIS assault. Of 55 army brigades, some 19 collapsed. The army was in a poor state in 2014 as US support had largely been withdrawn post-2009. However, enough remained to allow it to be reconstructed in the active operational areas, mainly by moving troops from quiet areas, such as Basra, to the key conflict zones. Two new divisions were formed in late 2014, 15th and 16th, from rallied troops. By January 2015, the Iraqi army deployed 48,000 men in 40 brigades compared to 210,000 in 55 brigades in November 2009.

The Iraqi Army is a multi-religious organisation. However, due to recruitment being organised on a locality basis, units at battalion level tended to belong to one or other of the main faiths or ethnic backgrounds and be led by a commander of the same background. Divisional compositions would therefore be variable. Although the DoD was led at the time by a Sunni minister (Khalid al-Ubeidi), the army had lost many Sunnis making it a more sectarian force.

DoD Ramadi OB: ISW identifies elements of four divisions (8, 9, 10 and 16) in Ramadi. There is only very limited information about these formations. The 8th was a "commando" division, effectively a motorised infantry division, but may have been refitted. 9th was a mechanized/armoured division (with ex-Hungarian T72s and MTLBs). 10th was a motorised division previously deployed in Basra and 16th was one of the new divisions. Elements of two brigades of 16th (73 and 76) were identified in Ramadi.

For the purposes of this simulation it is assumed that there are three operational commands in the city area (North, West and South) which consist of army units and other forces detailed below. The army units are likely to be a mix of mechanised infantry (in carriers such as BTR, BMP or DZIK-3) and mobile infantry (in HMMWVs or light trucks) possibly with some armoured support (T72M) plus combat engineering assets. The assumption is 9 battalions in total from various brigades deployable against the city centre (as opposed to ground holding or other clearance operations).

Ministry of the Interior (MoI) forces: The MoI is responsible for the Iraqi National Police (NP), a gendarmerie type armed force. The crisis in 2014 resulted in the loss of around a quarter of the NP forces, reducing from 120,000 men in 30 brigades to 36,000 men in 24 brigades. The troops on the ground in Ramadi consisted of NP paramilitary units supported by a variety of local forces. These local forces were formed during 2014 to resist the ISIS attack and consisted of two types: Emergency Response Units (battalion sized) made up from provincial police units with trained personnel and Emergency Battalions consisting of tribal levies. These latter units were predominantly made up from local Shia militias. Alongside the NP and emergency forces were units from the Hashd. The Hashd (al-Hashd al-shaabi or Popular Mobilisation Forces) is a national mobilisation of existing Shia militias to support ISF's fight against ISIS. The bulk of the troops, numbering around 120,000 in 10-20 brigade equivalents, were used for ground holding. However, some 20,000 or so veteran militia troops were also engaged in supporting the direct fight with ISIS.

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The MoI with its large variety of forces had around 68% of total ISF manpower. MoI was led in 2015 by a Badr minister, Mohammad Salem al-Ghabban. It was, as might be expected, very heavily under the control of Shia political and military elements (especially the al-Badr Organisation). Hashd forces had, and continue to have, strong links with Iran. This includes access to direct technical and military assistance from the Islamic Revolutionary Guard Corps-Qods Force (IRGC-QF). This support includes advisors (including Lebanese Hezbollah fighters), intelligence, air and drone assets and equipment. IRGC-QF is the Iranian strategic special operations force responsible for military activity outside Iran. It has a long history of sponsoring and supporting terrorist activities. Its current heavy level of involvement in Iraq (and now Syria) means that Iran has leveraged a major role within Iraq with important consequences for Iraq's future.

MoI Ramadi OB: Based on ISW information the conjecture is that there were around 3 NP battalions (2 NP plus one Emergency Response Unit), 2 emergency battalions and 3 militia battalion equivalents. The latter are likely to be Hashd units and largely used for ground holding and IED clearance in ISF occupied areas, but they may have had some offensive capability.

Note that none of the tribal/militia units engaged in this battle are thought to be Sunni. In Anbar Province, the Dulaimi Tribal Confederation (of local Sunni Tribes) provided support to ISF but they were not co-deployed with Shia forces and were restricted to ground holding operations.

Counter Terrorism Service (CTS) forces: The CTS is a small national special operations force. It is multi-faith and multi-ethnic and separate from both the DoD and MoI. Effectively, it belongs to the President. In 2015 it consisted of three small brigades, two of CTS special operations forces troops and one of Emergency Forces and was around 6,000 strong. It survived largely intact during 2014 and was the key force that helped slow down the ISIS offensive in 2014. Historically, CTS was a national counter-terrorism force operating within a legal framework and targeting terrorists who were the subject of arrest warrants. Now, CTS units are fully militarised, and they are the ISF's most effective combat troops. The three brigades of the CTS are known collectively as the Golden Division.

CTS Ramadi OB: In Ramadi it appears that 1st Iraqi Special Operations Force Brigade (1st ISOF) was engaged with four battalions on the ground.

Other forces: The ISF forces at Ramadi are also likely to have had ground support from Iraqi army artillery units. US and other Coalition partners' advisors were known to be deployed and closely involved in the operations, although they were theoretically not allowed to operate at lower than brigade level. US and UK air assets including drones and ground attack aircraft provided direct support to the ISF operation. It is not known how air assets were co-ordinated (e.g. it is not clear if there were US or UK JTACs in place). The primary air support missions flown in December 2015 appear to have been by RAF assets including Tornados, Typhoons and Reaper drones.

11.3 ISIS forces

Background: Describing ISIS fighters and their organisation is not easy. Anbar province was an ISIS Wilayat, or administrative region, of the Caliphate. ISIS in the Wilayat was led by an Emir

whose forces would have included the following types:

- The Caliphate Army: Foreign fighters controlled centrally by ISIS but deployed to regions as a strategic resource.
- The Army of Adversity: Local fighters recruited within the region and staying within the region.
- Specialists: Again, local fighters but specially trained in sniping, air defence, artillery weapons.
- Special forces: Local special forces.
- Local Sunni militia supporters.

Ramadi OB: There is no information other than estimates of numbers (around 1,400 or so) about what troops ISIS had in Ramadi so it is necessary to make some assumptions that, in general, they will fall into the categories described above.

- **Caliphate army:** Small groups of foreign fighters. Likely to be responsible for delivery of suicide vest (SV-IED) and vehicle borne IED (VB-IED) attacks. These fighters had vowed to fight to the death.
- **Local fighters:** The bulk of the local forces, small platoon sized tactical groups with light weapons (small arms, RPGs, mortars, technicals).
- **Specialists:** There are reports of ISIS air defence weapons (AA guns) in Ramadi and widespread use of snipers. There were no reports of heavy artillery weapons.
- **Special forces:** Not regarded as expendable, unlike foreign fighters, these were the real backbone of the defence.

- **Local militia:** None identified. In fact, ISIS carried out brutal attacks against local Sunni tribes because of their support for ISF.

Given the level of IED construction in Ramadi, there will have been a significant amount of ISIS resource available locally to plan, devise and manufacture IEDS (suicide vest, vehicle, house bombs).

This very short section on ISIS troops merely indicates what little information is available.

11.4 Tactical issues

The fact that ISIS set out to demonstrate that their Caliphate had a geographical and political reality meant that they had to occupy ground and hold it. This presented a completely different set of tactical issues for both sides from those encountered during the earlier insurgency. Some of these issues are described below.

Surround and destroy: These are not anti-insurgency operations but rather full-scale traditional ground combat operations. ISF and their advisors reverted to standard methods for taking ground and destroying the enemy. What appears to have been reasonably successful at Ramadi is the encirclement of the city to prevent resupply and reinforcement of ISIS and then step by step attacks to clear the city. Video reports from the city shows tactical operations that resemble very closely the sort of fighting encountered in built up areas in WW2, from Stalingrad to Berlin. The reason why this encirclement has not been fully successful is that it appears to have been possible, at least during the early stages of the battle for ISIS fighters to infiltrate and exfiltrate from the east. If this approach is taken when ISF launches its

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long-awaited offensive to retake Mosul, the encirclement will need to be far tighter. All encirclement operations also run extensive risks for civilian casualties where it is not possible to ensure civilians are removed from the area beforehand, as has been the case in Ramadi.

Airstrikes and guided munitions: US and RAF aircraft have supported the fighting in Ramadi. UK support is part of Operation Shader. A feature of the RAF's contribution is its guided munitions, the Paveway IV laser guided bomb delivered by Typhoons and the Brimstone anti-armour missile delivered by Tornados. Only the UK and the Saudis have access to these munitions, although they are under consideration by the US. The RAF aircraft were based in Cyprus (10 Tornados and 9 Typhoons). The bulk of the missions flown in direct support of the battle for Ramadi were by RAF aircraft. Multiple missions were flown by RAF Tornadoes, Typhoons and Reaper drones between 22 December 2015 and 4 January 2016.

Little information is available about the US airstrikes (CENTCOM does not issue details of the units or aircraft types involved in air operations) but it is reported that 1036 militants were killed by US airstrikes in Ramadi in the last week of December 2015. This seems a little on the high side given the total estimated ISIS casualties. B1 Lancers were providing air support in the region until January 2016 when they were replaced by B52s. In this game the US air units are represented by F15E Strike Eagles. The Iraqi air force also flew F16 sorties. On this basis I have not made any distinction between the air assets of different Coalition partners. After all air power is airpower!

Drones: US and RAF drones have been deployed in Ramadi. RAF drones flew from Kuwait (10 MQ9 Reapers). Drones have been used for both surveillance and delivery of precision strikes.

Civilians as human shields: There were reports from Ramadi that ISIS deliberately moved civilians to threatened areas within the city as a means of deterring ISF airstrikes on key defensive areas.

Troop quality: Even a cursory viewing of video footage from the fighting shows a dangerously poor level of weapon handling skills and tactical direction. ISF relied on their elite troops from the CTS to drive their attacks. CTS went on to bear the brunt of the fighting in Fallujah and Mosul.

IED defensive zones: Rather than simple weapons of terrorism, IEDs have now become the main defensive weapon for ISIS. There have been many examples in recent years In Afghanistan and in Iraq of complex defensive systems built around IEDs. They include static IEDs initiated by pressure pads, remote control by wire and remote control by radio or phone. These types of defensive systems, similar in many respects to the multi-layered and booby-trapped defences used in WW2, are a common feature of ISIS defended areas. Previous counter measures involving detection and disarmament (Operation Barma) suitable for counter-insurgency operations are now being replaced by traditional (WW2) anti-mine technology including Viper and Python high explosive hoses. These are propelled by rockets into a mined area and the subsequent detonation of the hose clears IEDs in the area, but not always completely. This technology was developed during WW2 and is now commonly in use, especially where IEDs need to be cleared quickly to facilitate an assault.

House borne IEDs (HB-IEDs): We are familiar with IEDs borne by people (Suicide Vests: SV-IEDs) and vehicles (Vehicle borne IEDs: VB-IEDS). We are even familiar with IEDs borne by animals ("mule bombs") but now in Iraq it is common for buildings to be used as large IEDs and set off when occupied by the enemy. In Ramadi, large parts of the general hospital were rigged as IEDs and set-off immediately prior to being occupied by CTS troops in January 2016.

12.0 Credits

Game Design: Jay Ward

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